

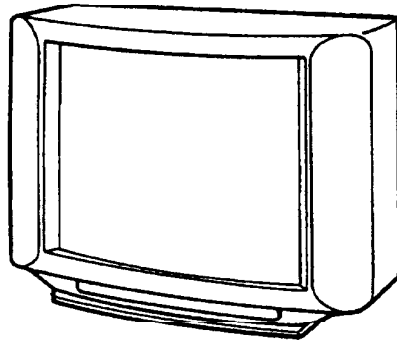
KV-2965MT

RM-827S

SERVICE MANUAL

Thailand Model

Chassis No. SCC-D29N-A



GP-1A CHASSIS

MODELS OF THE SAME SERIES

KV-2965MTJ	
KV-2565MT/2565MTJ/2965MT	
KV-2965MTT	

SPECIFICATIONS

Power requirements 110 - 240V AC, 50/60Hz
 Power consumption Indicated on the rear of the TV.
 Color system PAL, PAL60, NTSC_{3.58}, NTSC_{4.43}, SECAM

Audio output
 Inputs

6W+6W speaker
 Antenna 75 ohms
 VIDEO INPUT jacks : phono jacks
 Video : 1Vp-p, 75 ohms
 Audio : 500 m Vrms, high impedance

Television system and Channel coverage

Television system	M	B/G	I	D/K
Low VHF band	A2-A6	E2-E4	—	R1-R5
High VHF band	A7-A13	E5-E12	—	R6-R12
UHF	A14-A79	E21-E69	B21-B68	R21-R60
CATV	A-8-W+84	S01-S03 S1-S41	—	—

Outputs

S-TERMINAL VIDEO INPUT jack : 4-pin DIN

VIDEO OUT jacks:phono jacks
 Video : 1Vp-p, 75 ohms
 Audio : 500 m Vrms, low impedance

Picture tube
 Dimensions
 Weight

72.4 cm (29 inches)
 782 × 577 × 515 mm (w/h/d)
 44.5 kg

Design and specifications are subject to change without notice.



TRINITRON® COLOR TV
SONY®


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CAUTION

SHORT CIRCUIT THE ANODE OF THE PICTURE TUBE AND THE ANODE CAP TO THE METAL CHASSIS, CRT SHIELD, OR CARBON PAINTED ON THE CRT, AFTER REMOVING THE ANODE.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS, EXPLODED VIEWS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SECTION 1 GENERAL

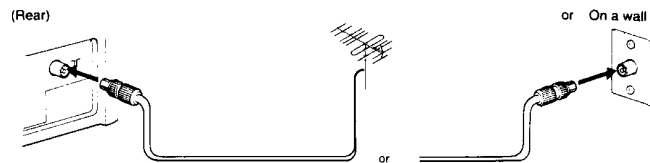
The operating instructions mentioned here are partial abstracts from the Operating Instruction Manual. The page numbers of the Operating Instruction Manual remain as in the manual.

Operating Instructions

Before operating the TV, please read this manual thoroughly and retain it for future reference.

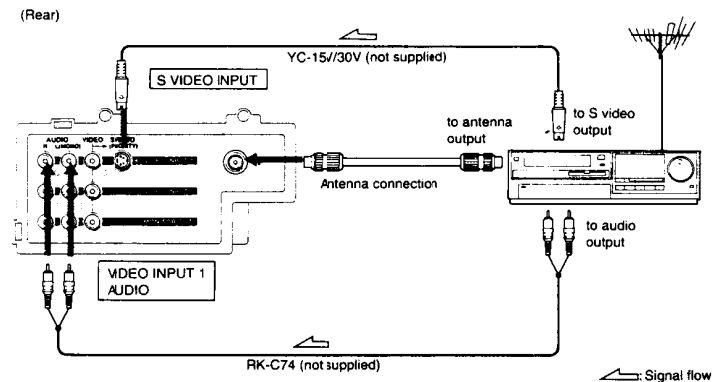
1-1. ANTENNA CONNECTION

To connect a VHF antenna or a combination VHF/UHF antenna – 75-ohm coaxial cable (round)
Plug the connector into the "I" socket of the TV.



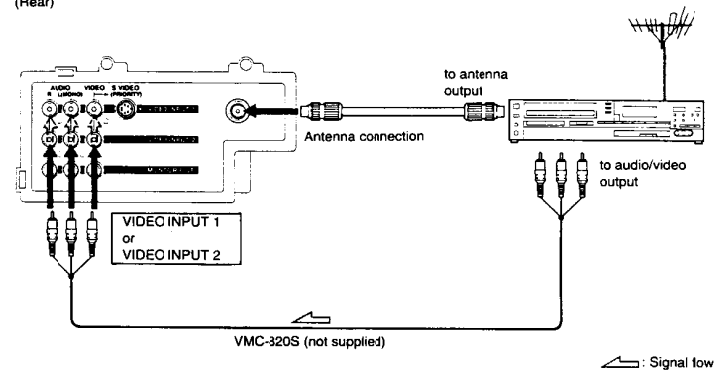
1-2. CONNECTING A VTR OR OTHER EQUIPMENT

Connecting a VTR Equipped with the S Video Output Connector



Connecting a VTR or Other Equipment not Equipped with an S video Output Jack

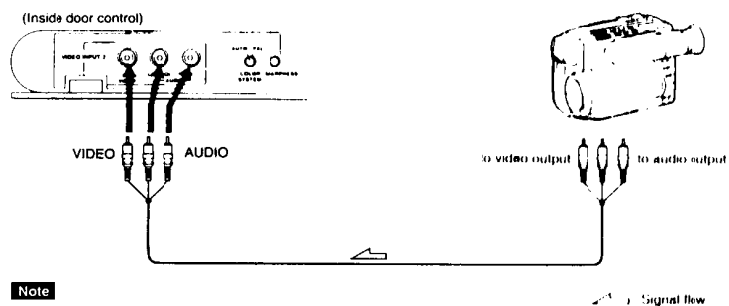
(Rear)



Connecting a VTR or Camcorder to the VIDEO INPUT Jacks on the Front

This TV is equipped with 2 sets of VIDEO INPUT 2 jacks. 2 sets are not available to be used at the same time. When using equipment connected, turn off other equipment not in use. For connection, use a commercially available connecting cord.

(Inside door control)



Note

If you connect monaural equipment, connect the audio output of the VTR to L (MONO) jack of VIDEO INPUT 2. The monaural sound will be heard from both speakers.

Connecting two VTRs for Tape Editing

 \sqrt{TR} (for playback)

VIDEO INPUT 1
or

(Rear)

VMC-810S/820
(not supplied)

VMC-810S/820
(not supplied)

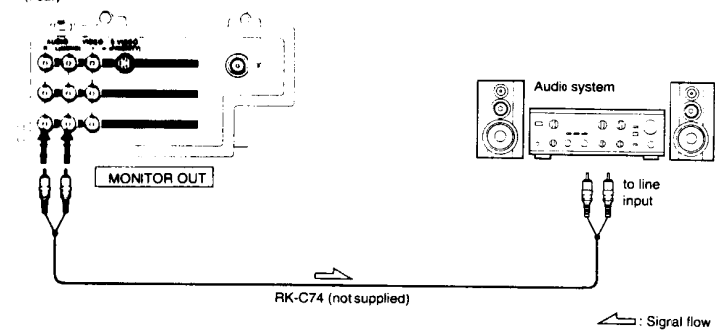
VTR (for recording)

MONITOR OUT

 : Signal flow

Connecting an Audio System

(Fear)



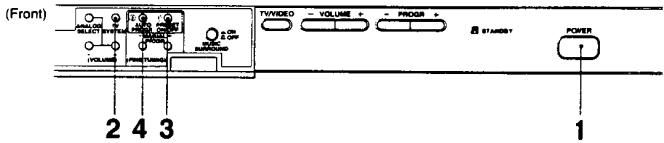
Note

If you connect monaural equipment, connect the equipment to the L (MONO) jack.
The monaural sound will be heard from both speakers.

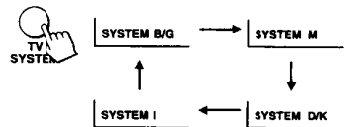

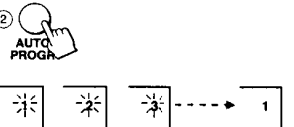
1-3. PRESETTING TV CHANNELS

Presetting TV channels automatically

You can preset up to 30 channels automatically to the program position numbers (0 to 29) in numerical sequence from channel number 1.



- Press the POWER button.
- Press the TV SYSTEM button to select your local TV system.
- Press the PRESET ON/OFF button ①.
- Press the AUTO PROGRAM button ②.

Manual Presetting

To change the program number for a channel, or to receive a channel of weak signal, preset the channel manually.

Example: To preset a channel in program number 8

- Press the PRESET ON/OFF button.
- Press the PROGR +/- buttons until "8" appears.
- Press the TV SYSTEM button to select your TV system.
- Press the MANUAL PROGR +/- buttons until the channel you want appears.
- Press the PRESET ON/OFF button.

To preset other channels
Repeat steps 1 through 5.

Skipping Program Positions

You can skip the unused or undesired program position when you are selecting a program using the PROGR +/- buttons.

Example: To skip the program position 8

- Press the PROGR +/- buttons until "8" appears.
- Press the PRESET ON/OFF button.
- Press the PIC MODE button on the Remote Commander.
- Press the PRESET ON/OFF button.


To skip other channels
Repeat steps 1 through 3.

To cancel the skip setting
Preset the station manually as described in "Manual Presetting", or preset automatically again.

6

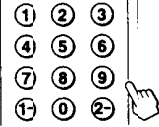
1-4. WATCHING THE TV

To switch on or off the TV




The TV power is turned on or turned off completely.

To select a channel




To select 8
To select 10
To select 25

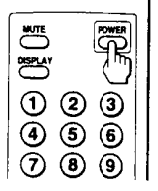
or



To adjust the volume



To set the TV to standby mode

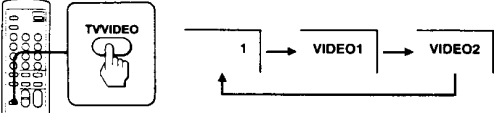


To turn on the TV, press the POWER button again or press the channel number buttons or the PROGR +/- buttons.

Note
You can also use the buttons on the TV that have the same function.


1-5. WATCHING THE VIDEO INPUT

- Press the TV/VIDEO button on the Remote Commander.
- Set the VTR to playback mode.



To return to TV mode
Press the TV/VIDEO button, the channel number buttons, or the PROGR +/- buttons.

Note
Do not use the VTRs connected to the front and rear A/V connectors simultaneously. When you use a VTR, turn off or disconnect another VTR.

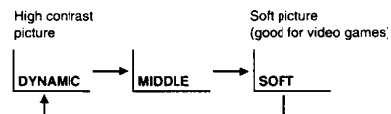
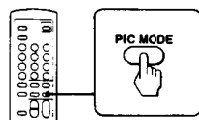


7

1-6. ADJUSTING THE PICTURE AND SOUND

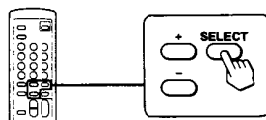
Selecting the Picture Mode

Press the PIC MODE button.

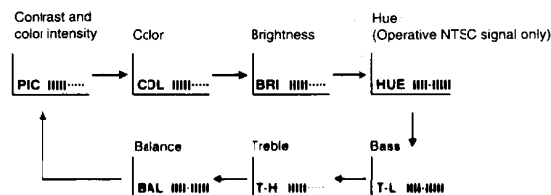
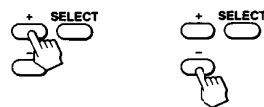


Adjusting the Picture and Sound Quality

1 Select the adjustment item using the SELECT button on the Remote Commander (or ANALOG SELECT button on the TV).

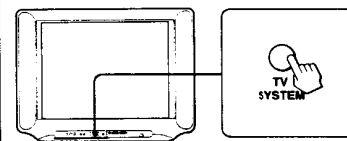


2 Adjust using the + and - buttons.

**Note**

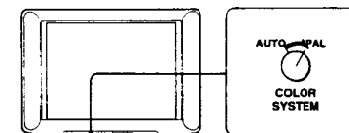
If you change the PIC MODE setting after making the above adjustments, the adjustment changes according to the PIC MODE setting, and CO. (color), BRI (brightness) and HUE return to their original factory settings.

To set TV SYSTEM



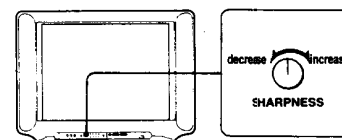
If the sound is distorted or noisy, or color is abnormal while receiving a program through the VHF/UHF terminal, press TV SYSTEM until clear sound or normal color is obtained. The TV system set by his operation is memorized for the program position.

To set COLOR SYSTEM



Normally, set COLOR SYSTEM to AUTO. If the color reproduction is not normal (for example, the picture turns red or blue) while receiving PAL and PAL 60 playback signal, set to PAL. The picture color will become normal.

Adjusting SHARPNESS

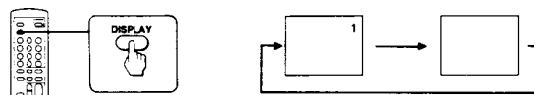


Turn SHARPNESS clockwise to increase sharpness and counterclockwise to decrease sharpness.

1-7. USING CONVENIENT FEATURES

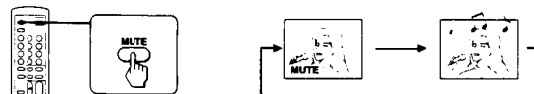
Tuning On or Off the On-screen Display

Press the DISPLAY button.



Muting

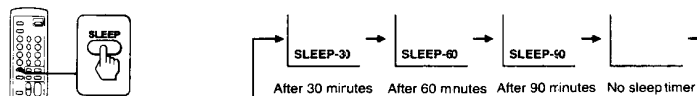
Press the MUTE button.



Setting the Sleep Timer

The TV will be turned off after about 30, 60, or 90 minutes.

Press the SLEEP button.



To cancel the sleep timer

Press the SLEEP button until the sleep display disappears.

Setting a MUSIC SURROUND Mode

Set MUSIC SURROUND to \square ON during a stereo sound reproduction.

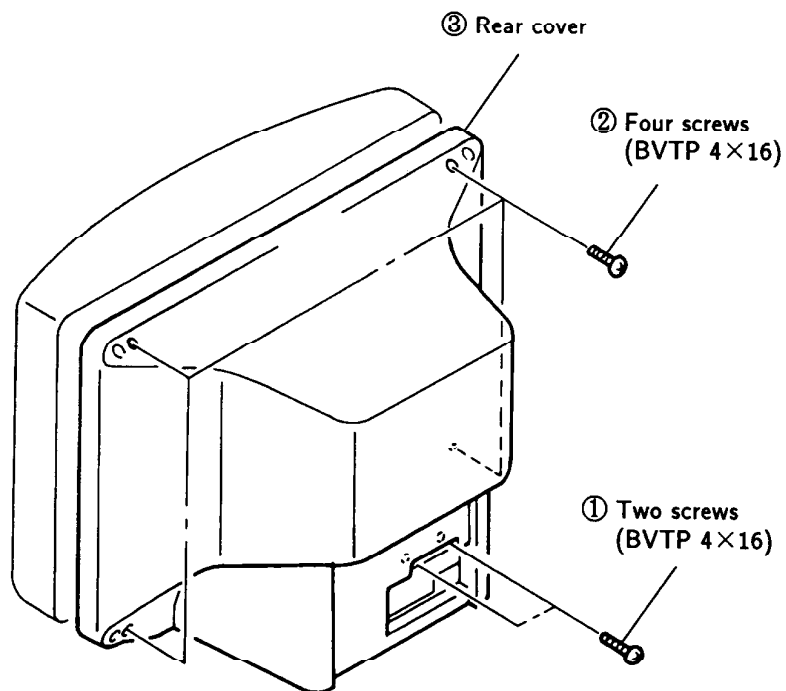
You receive a theatrical audio effect or live concert effect sound.

This function does not work for monaural sound.

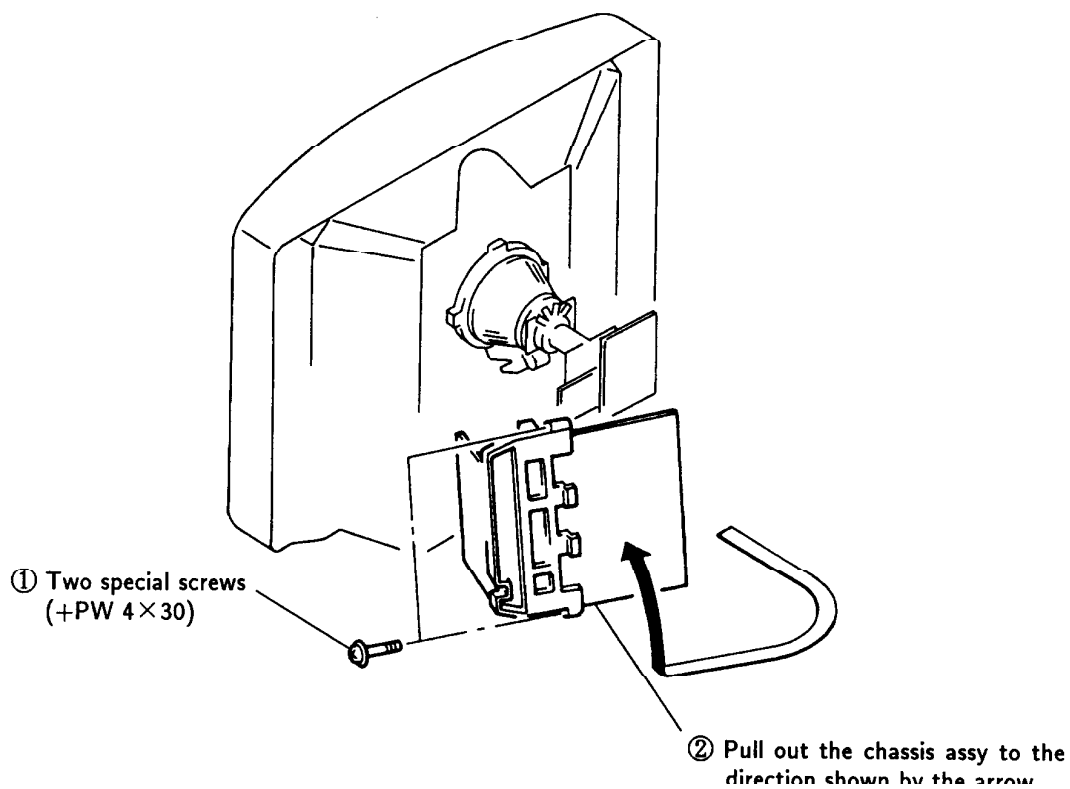
SECTION 2

DISASSEMBLY

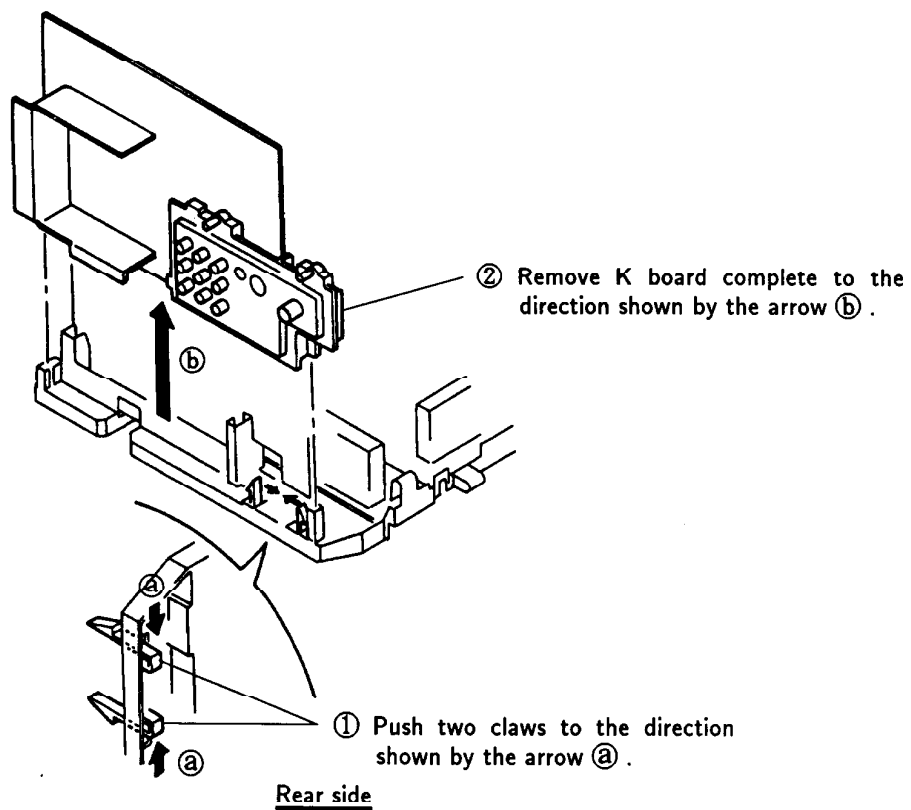
2-1. REAR COVER REMOVAL



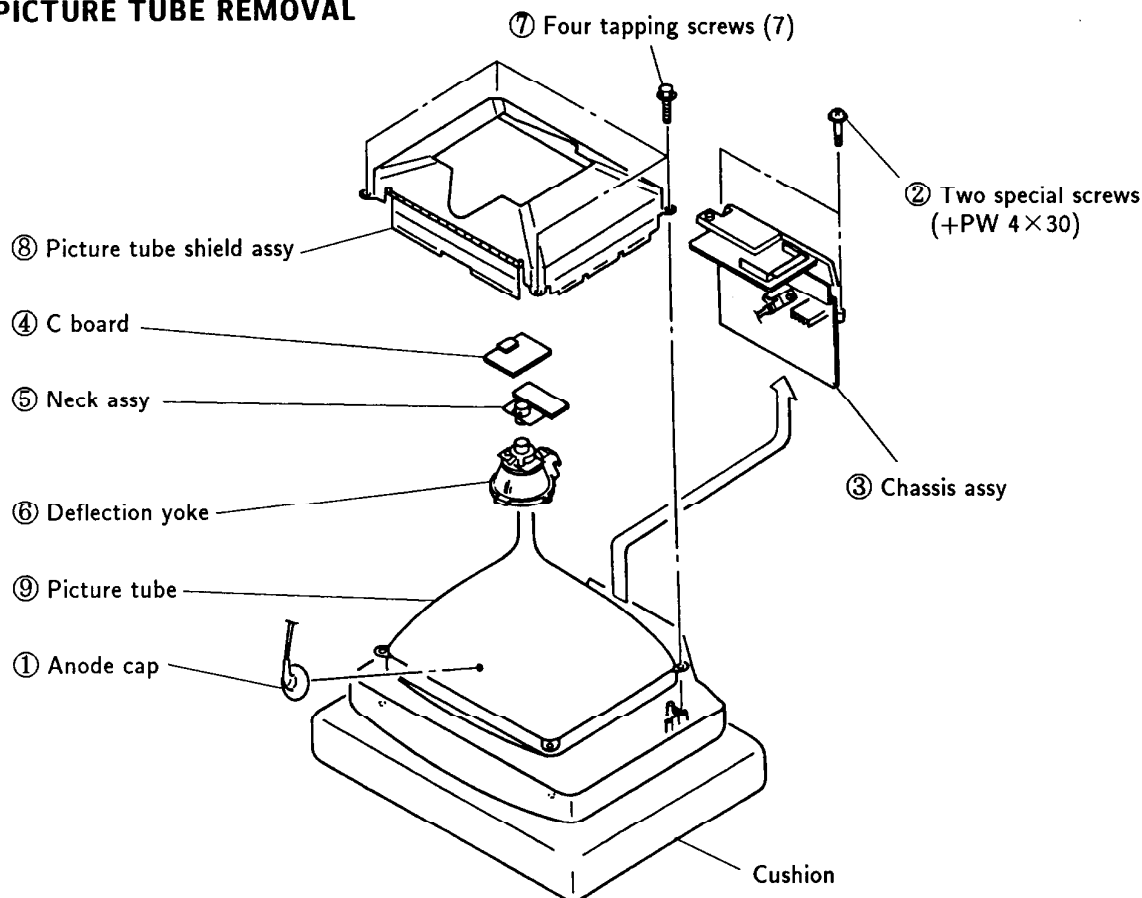
2-2. SERVICE POSITION



2-3. K BOARD REMOVAL



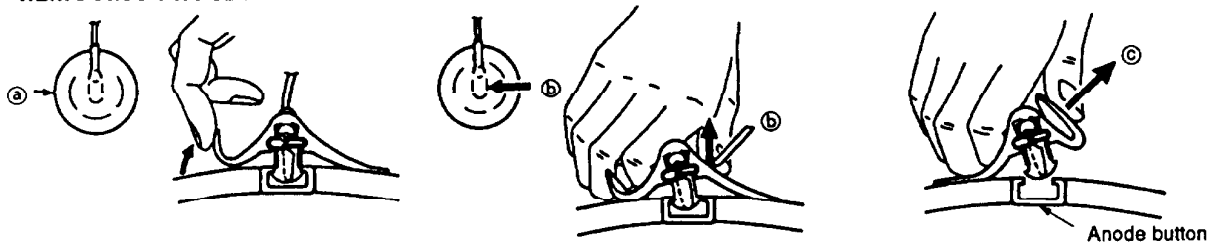
2-4. PICTURE TUBE REMOVAL



• REMOVAL OF ANODE-CAP

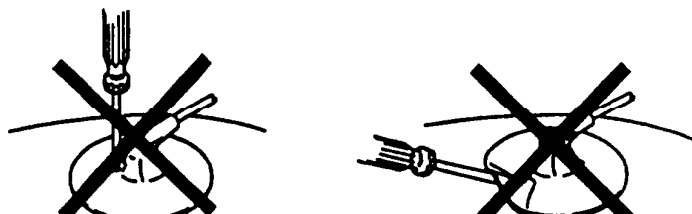
NOTE : Short circuit the anode of the picture tube and the anode cap to the metal chassis, CRT chield or carbon painted on the CRT, after removing the anode.

• REMOVING PROCEDURES



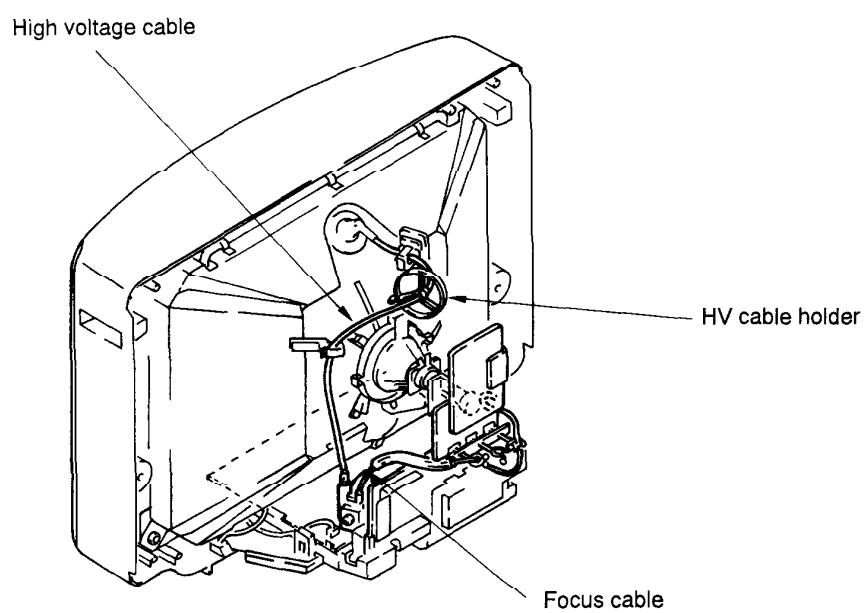
• HOW TO HANDLE AN ANODE-CAP

- ① Don't hurt the surface of anode-caps with sharp shaped material!
- ② Don't press the rubber hardly not to hurt inside of anode-caps!
A material fitting called as shatter-hook terminal is built in the rubber.
- ③ Don't turn the foot of rubber over hardly!
The shatter-hook terminal will stick out or



2-5. HIGH VOLTAGE CABLE, FOCUS CABLE WIRING ARRANGEMENT

After repairing, arrange the high voltage cable and the focus cable as shown in the figure below.



SECTION 3 SET-UP ADJUSTMENTS

- The following adjustments should be made when a complete realignment is required or a new picture tube is installed.
- These adjustments should be performed with rated power supply voltage unless otherwise noted.

The control and switch below should be set as follows unless otherwise noted :

PICTURE control..... normal
BRIGHTNESS control..... normal

Perform the adjustments in order as follows:

1. Beam Landing
2. Convergence
3. Focus
4. White Balance

Note: Test Equipment Required.

1. Color-bar Pattern Generator
2. Degausser
3. Digital multimeter

Preparations :

- Feed in the white pattern signal.
- Before starting degauss the entire screen.

3-1. BEAM LANDING

1. Input the white signal with the pattern generator.
Contrast } normal
Brightness }
2. Position neck ass'y as shown in Fig 3-2.
3. Set the pattern generator raster signal to red.
4. Move the deflection yoke to the rear and adjust with the purity control so that the red is at the center and the blue and the green take up equally sized areas on each side.
(See Fig. 3-1 through 3-3.)
5. Move the deflection yoke forward and adjust so that entire screen is red. (See Fig. 3-1.)
6. Switch the raster signal to blue, then to green and verify the condition.
7. When the position of the deflection yoke has been decided, fasten the deflection yoke with the screws.
8. If the beam does not land correctly in all the corners, use a magnet to adjust it.
(See Fig. 3-4.)

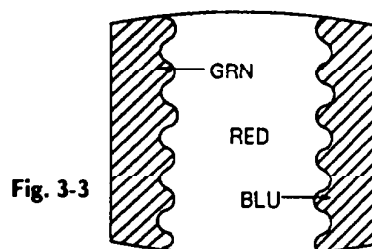
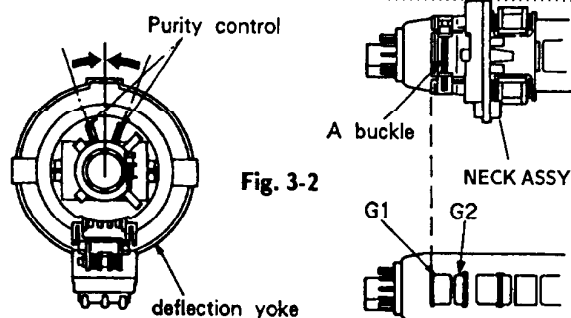


Fig. 3-3

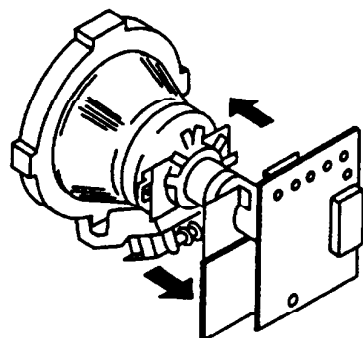
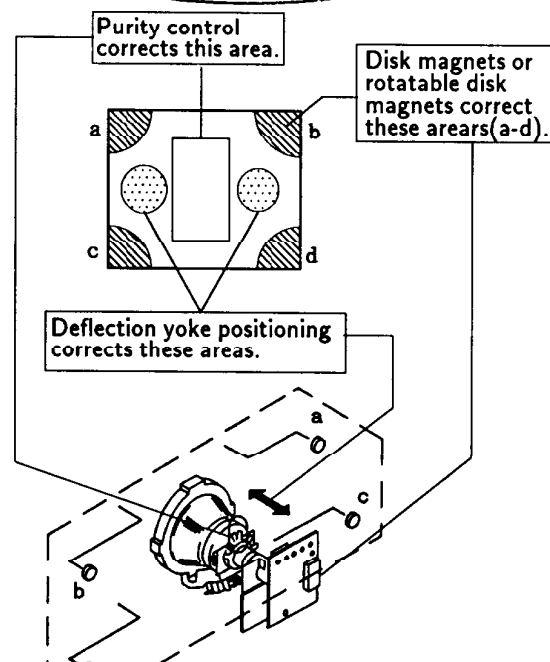


Fig. 3-1

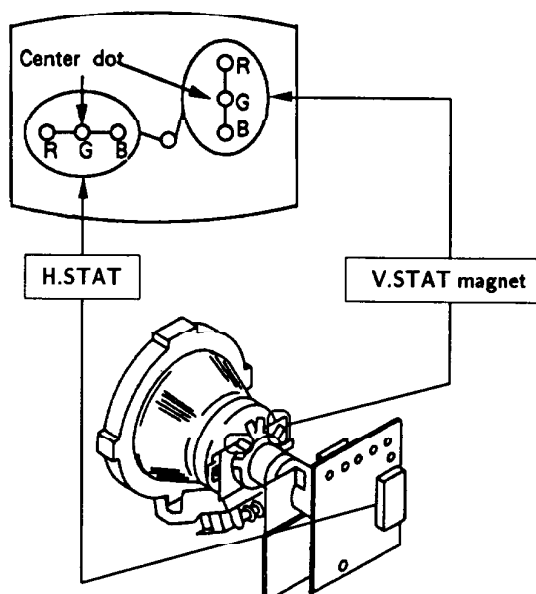


3-2. CONVERGENCE

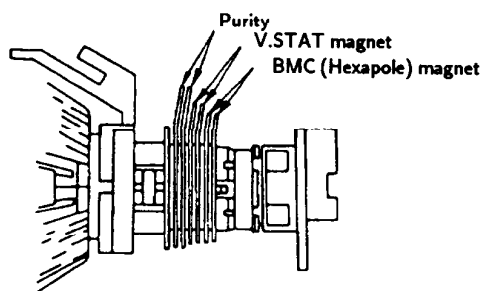
Preparations :

- Before starting perform FOCUS, H.SIZE, V.LIN and V.SIZE adjustments.
- Set BRIGHTNESS control to minimum.
- Feed in dot pattern.

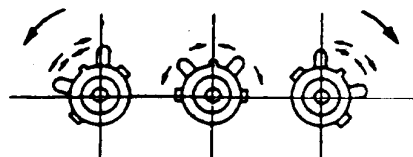
(1) Horizontal and Vertical Static Convergence



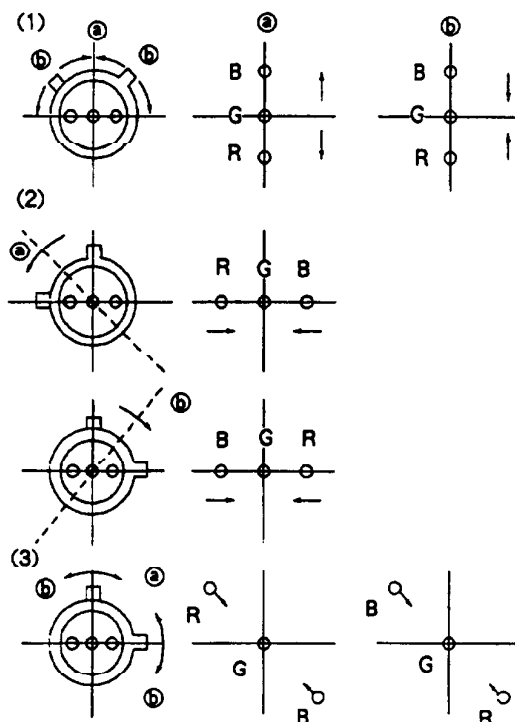
1. Adjust H.STAT VR to converge red , green and blue dots in the center of the screen. (Horizontal movement)
2. Adjust V.STAT magnet to converge red, green and blue dots in the center of the screen. (Vertical movement)
3. If the red, green and blue dots do not converge in the center of the screen with H.STAT VR, perform horizontal convergence adjustment using H.STAT VR and V.STAT magnet as shown below. (In this case, H.STAT VR and V.STAT magnet effect each other.)



- Tilt the V.STAT magnet and adjust static convergence to open or close the V.STAT magnet.



4. When the V.STAT magnet is moved in the direction of arrow ㊳ and ㊴, red, green and blue dots move as shown below.

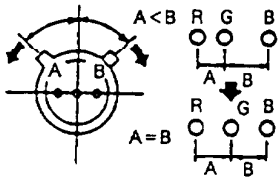


If the blue dot do not Converge with red and green dots, perform following steps.

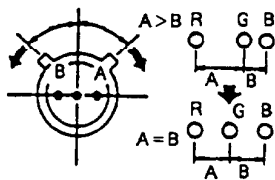
- HMC and VMC correction for BMC (Hexapole) Magnet.

1. HMC (Horizontal Miss Convergence) correction and motion of the Electron Beam with the BMC Magnet.

HMC correction (A)

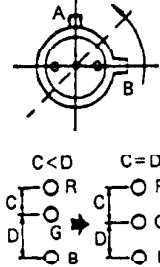


HMC correction (B)

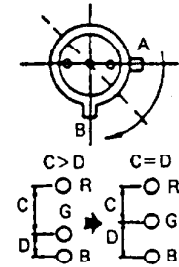


2. VMC (Vertical Miss Convergence) correction and motion of the Electron Beam with the BMC Magnet.

VMC correction (A)



VMC correction (B)



(2) Dynamic Convergence Adjustment

Preparations :

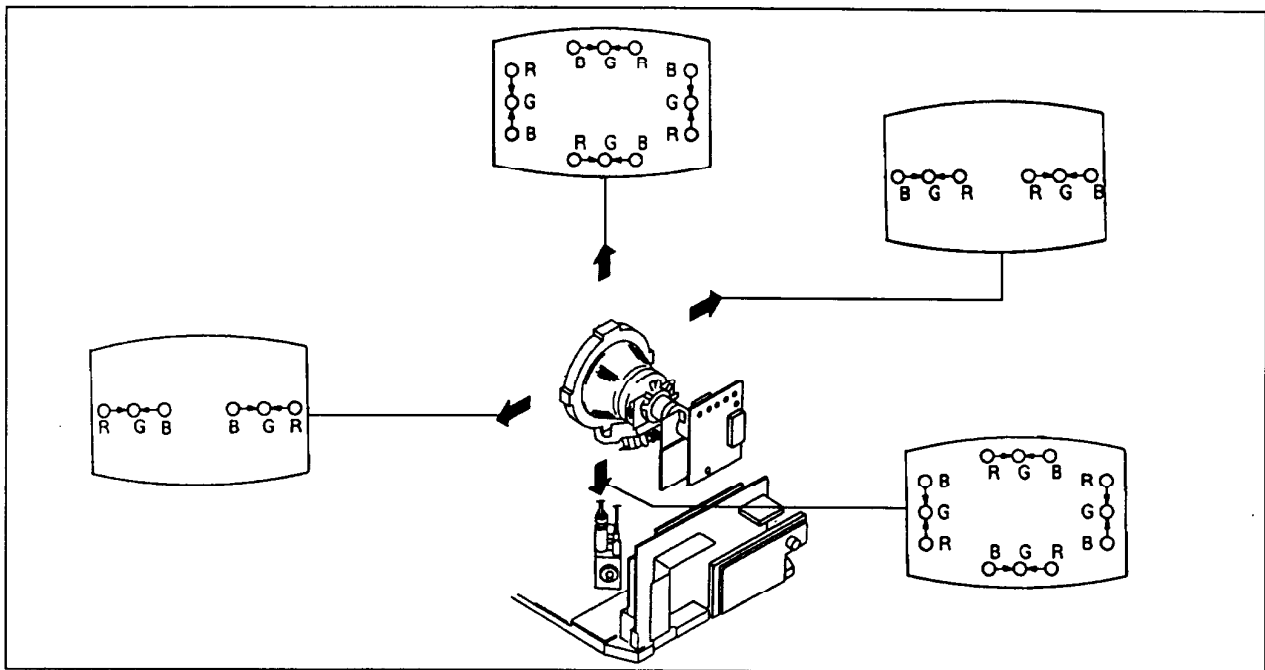
● Before starting perform Horizontal and Vertical static convergence Adjustmet.

1. Slightly loosen deflection yoke screw.
2. Remove deflection yoke spacers.

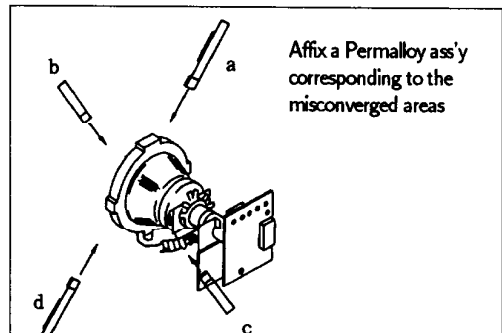
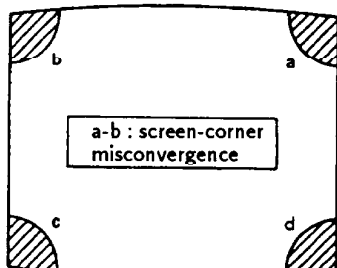
3. Move the deflection yoke for best convergence as shown below.

4. Tighten the deflection yoke screw.

5. Install the deflection yoke spacers.



(3) Screen -corner Convergence



3-3. FOCUS

Adjust FOCUS control for best picture.

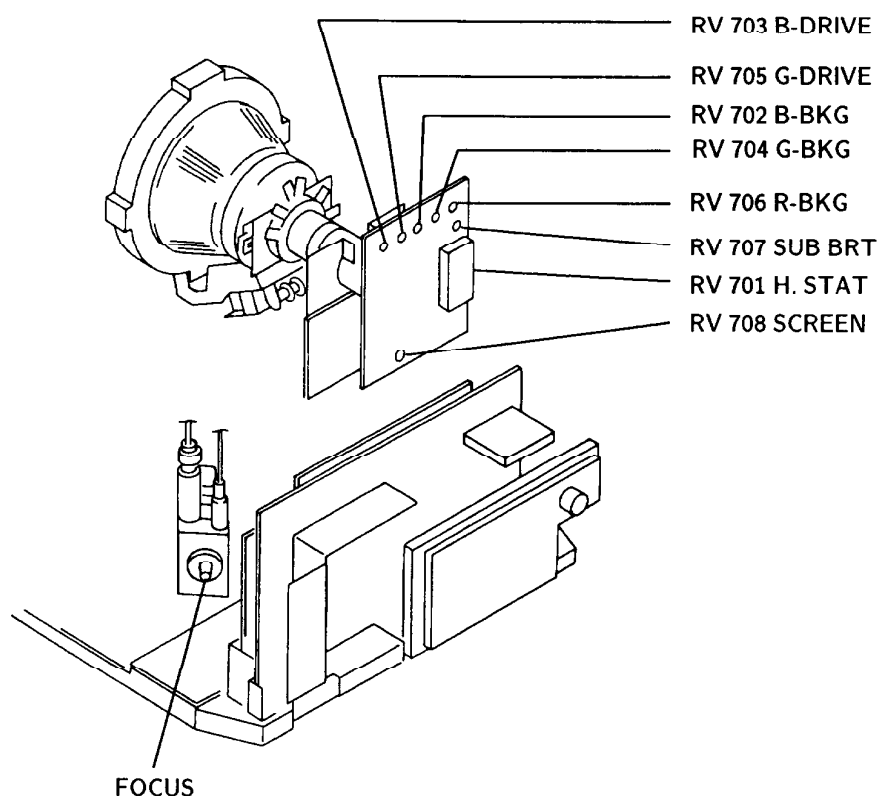
3-4. SCREEN(G 2) and WHITE BALANCE

[SCREEN(G2)]

1. Input dots pattern.
2. Set the PIC control at minimum and set the BRT control at maximum.
3. Confirm the BKG voltage is less than 180 Vdc when turning RV 706 (R.BKG), RV 704 (G.BKG) and RV 702 (B.BKG).
4. Note the color when becomes visible first when turning RV 708 (SCRN).

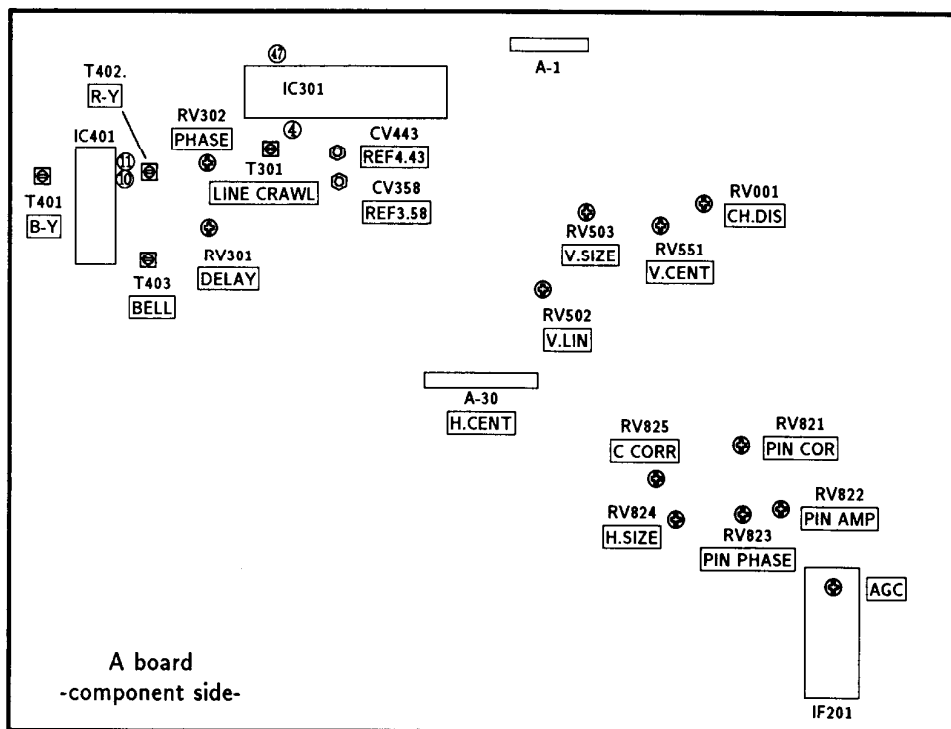
[WHITE BALANCE (Cut off)]

1. Input collar bar signl.
2. Set the PIC control to minimum and set the BRT control at normal.
3. Turn RV 703 (B.DRIVE) and RV 705 (G.DRIVE) fully clockwise.
4. Set RV 706 (R.BKG), RV 704 (G.BKG) and RV 702 (B.BKG) to minimum.
5. Turn RV 707 (SUB BRT) slowly to obtain a faintly visible blue stripe.
6. Switch over all white signal.
7. Adjust BKG controls for best white balance.
8. Set the PICTURE control to maximum. Observe the screen and adjust the DRIVE controls for best white balance.
9. Repeat steps 7 and 8.



SECTION 4 CIRCUIT ADJUSTMENT

4-1. A BOARD ADJUSTMENTS

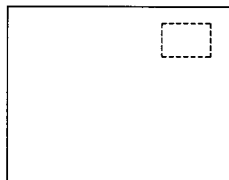


RF AGC ADJUSTMENT (IF201)

1. Receive a strong off-air signals.
2. Adjust RF AGC VR control so that snow noise and cross-modulation just disappear from the picture.

Channel display POSITION ADJUSTMENT (RV001)

1. Set PIC control to maximum.
2. Adjust RV001 so that the channel display should be positioned at up-right on the screen.



A • P • C ADJUSTMENT (CV443) (PAL)

1. Input the PAL color-bar signal.
2. Set the PIC, COL, and BRT controls to normal.
3. Short circuit between pin ④ and pin ④7 of IC301 with jumper.
4. Adjust CV443 for suitable color intensity.
5. Remove a jumper.

REF OSC 3.58 ADJUSTMENT (CV358) (NTSC 3.58)

1. Short circuit between pin ④ and pin ④7 of IC301 with a jumper.
2. Set the PIC, COL and BRT controls to normal.
3. Input NTSC 3.58 color-bar signal.
4. Adjust CV358 for suitable color intensity.
5. Remove the jumper.

ANTI PAL, LINE CRAWLING ADJUSTMENT (RV301,RV302,T301)

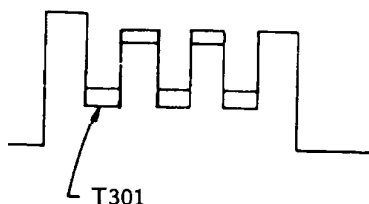
• ANTI PAL ADJUSTMENT

1. Input PAL color-bar signal.
2. Set the PIC, COL and BRT controls to normal.
3. Connect the oscilloscope to pin ③ of A-1 connector.
4. Adjust RV301 (DELAY) and RV302 (PHASE) to obtain the waveform as shown below.

• LINE CRAWLING ADJUSTMENT



1. Input the PAL color-bar signal.
2. Set the PIC, COL and BRT controls to normal.
3. Connect the oscilloscope to pin ③ of A-1 connector.
4. Adjust T301 for minimum line crawling.



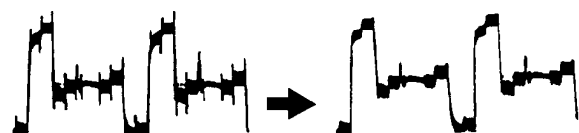
DISCRI ADJUSTMENT (T401,T402)

1. Input the SECAM color-bar signal.
2. Connect the dual-trace oscilloscope to the pin ⑪ (B-Y) and pin ⑩ (R-Y) of IC401.
3. Adjust T402 (R-Y) and T401 (B-Y) as shown the following figure.

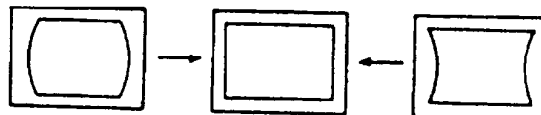


BELL FILTER ADJUSTMENT (T403)

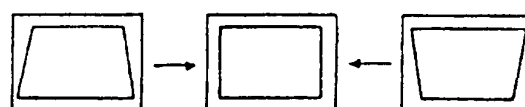
1. Input the SECAM color-bar signal.
2. Connect the oscilloscope to pin ⑩ (R-Y) of IC 401.
3. Adjust T403 as shown the following figure.



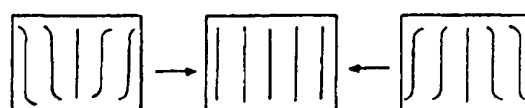
RV822 PIN ANP (PINCUSHION AMPLIFIER)



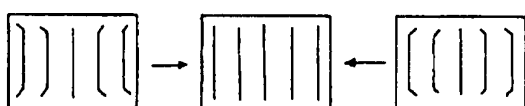
RV823 PIN PHASE (PINCUSHION PHASE)



RV821 PIN COR (PINCUSHION CORRECT)



RV825 C.CORR(CORNER CORRECT)



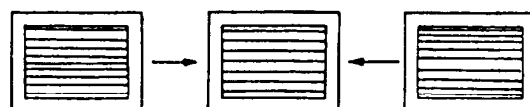
RV824 H.SIZE (HORIZONTAL SIZE)



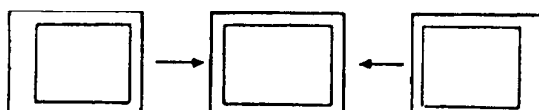
RV503 V.SIZE (VERTICAL SIZE)



RV502 V.LIN (VERTICAL LINEARITY)



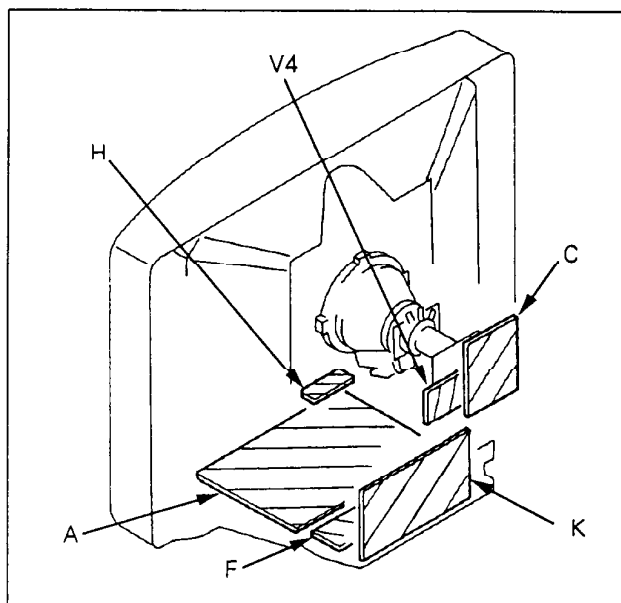
CN550 H.CENT (HORIZONTAL CENTER)



RV551 V.CENT (VERTICAL CENTER)



5-3. CIRCUIT BOARDS LOCATION



5-4. SCHEMATIC DIAGRAMS AND PRINTED WIRING BOARDS

Note:

- All capacitors are in μF unless otherwise noted. pF: μF 50 WV or less are not indicated except for electrolytic and tantalums.
- All resistors are in ohms.
 $\text{k}\Omega = 1000\Omega$, $\text{M}\Omega = 1000\text{k}\Omega$
- Indication of resistance, which does not have one for rating electrical power, is as follows.

Pitch: 5 mm
Rating electrical power $\frac{1}{4}$ W

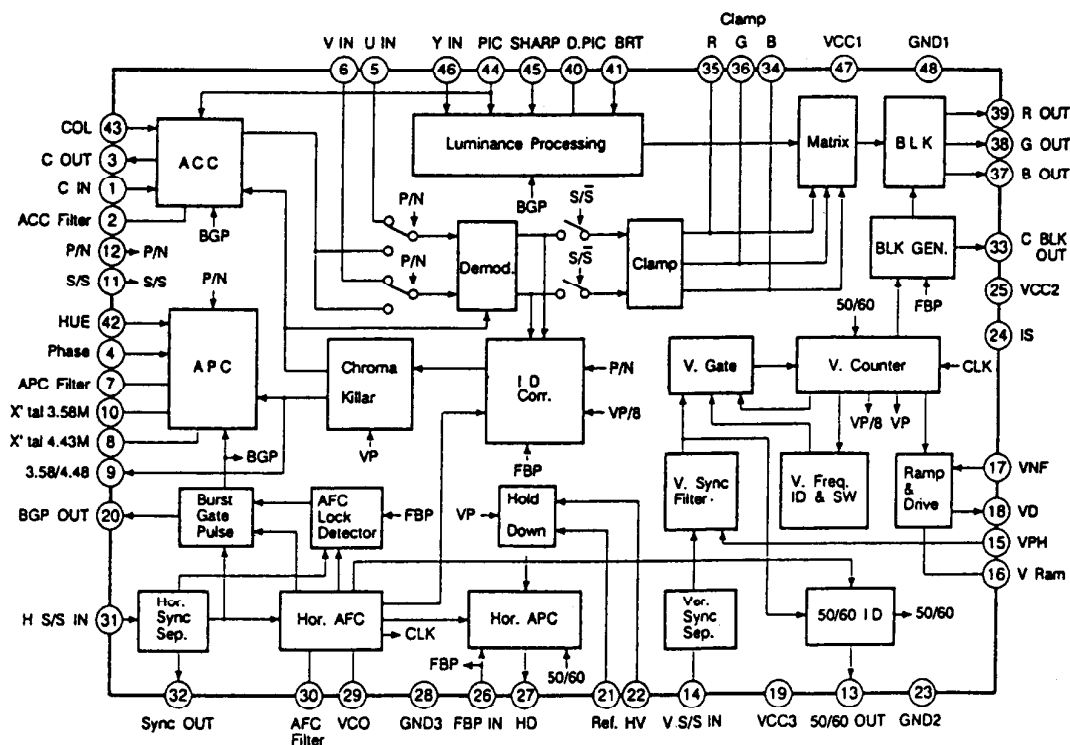
- : nonflammable resistor.
- \triangle : internal component.
- : panel designation, or adjustment for repair.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- : earth-chassis.
- Readings are taken with a color-bar signal input.
no mark : with PAL color-bar signal received.
() : with SECAM color-bar signal received.
< > : with NTSC3.58 color-bar signal received.
- Readings are taken with a $10\text{M}\Omega$ digital multimeter.
- Voltage are dc with respect to ground unless otherwise noted.
- Voltage variations may be noted due to normal production tolerances.
- All voltages are in V.
- Circled numbers are waveform references.
- : B+ bus.
- : signal path. (HF)

Reference information

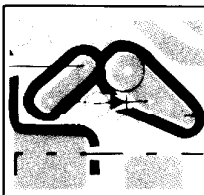
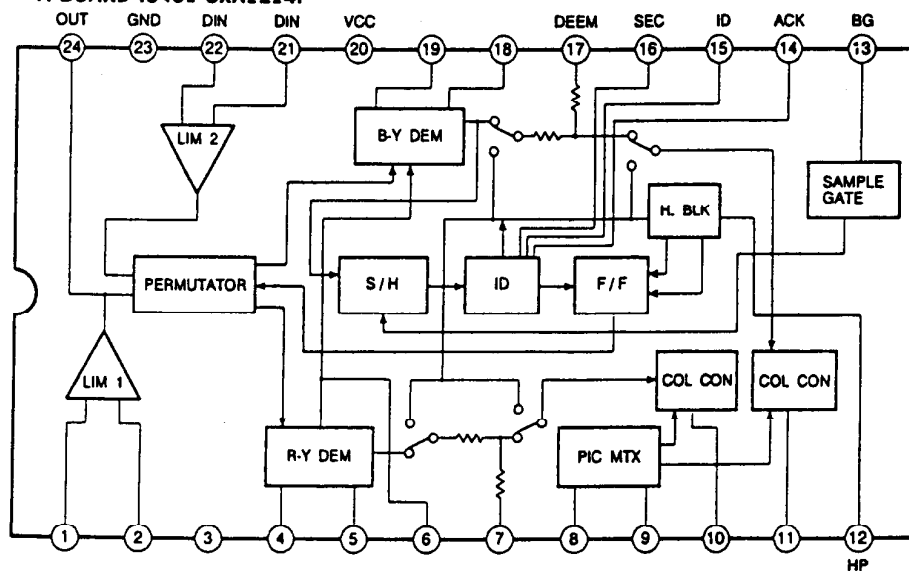
RESISTOR	: RN	METAL FILM
	: RC	SOLID
	: FPRD	NONFLAMMABLE CARBON
	: FUSE	NONFLAMMABLE FUSIBLE
	: RS	NONFLAMMABLE METAL OXIDE
	: RB	NONFLAMMABLE CEMENT
	: RW	NONFLAMMABLE WIREWOUND
	: ※	ADJUSTMENT RESISTOR
COIL	: LF-8L	MICRO INDUCTOR
CAPACITOR	: TA	TANTALUM
	: PS	STYROL
	: PP	POLYPROPYLENE
	: PT	MYLAR
	: MPS	METALIZED POLYESTER
	: MPP	METALIZED POLYPROPYLENE
	: ALB	BIPOLAR
	: ALT	HIGH TEMPERATURE
	: ALR	HIGH RIPPLE

Note: The components identified by shading and mark are critical for safety. Replace only with part number specified.

• A BOARD IC301 CXA1213S



• A BOARD IC401 CXA1214P

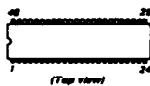


NOTE:

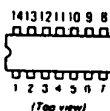
The circuit indicated as left contains high voltage of over 600 Vp-p. Care must be paid to prevent an electric shock in inspection or repairing.

5-5. SEMICONDUCTORS

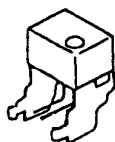
CXA1213S



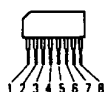
CXK5864BSP-10L



KEY-C00SV-F



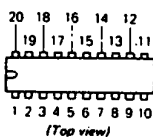
LA7016



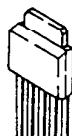
LM393P
RC4558P
ST24C02AB1
TEA2031A



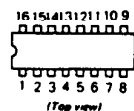
LM1036N



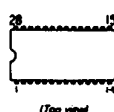
L78LR05D-MA



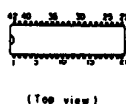
MC14052BCP
MC14049UBCP
TDA8444
μ PD4053BC



MC14066BCP
MC33079P



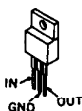
PCA84C84P/054
TC6011N



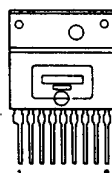
RC78L09A



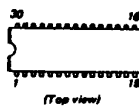
RC7812FA



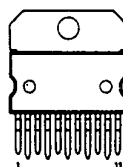
STR-S5741



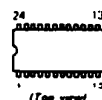
TA8862N



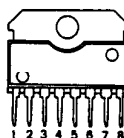
TDA2009A



TD6710AN



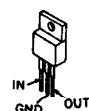
μ PC1498H



μ PC574J



μ PC7893HF



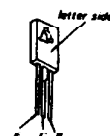
DTA114ES
DTC114ES
DTC124ES
DTC143TS
DTC144ES
2SC3327-A



2SA1175-HFE
2SC2785-HFE



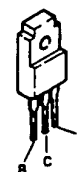
2SA1220A-P
2SC2611
2SC2688-LK



2SA1221-L
2SB734-34
2SC2958-L
2SD774-34



2SA1306A-Y
2SC3298B-Y



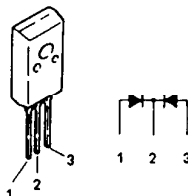
DTA114ES
DTC114ES
DTC124ES
DTC143TS
DTC144ES
2SC3327-A



2SC2216



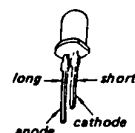
EGP30GL-6072
ERC06-15S
RU-1P
RU-3AM



MC932



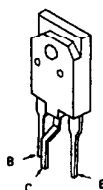
SEL1222R-C



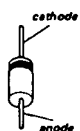
2SA1175-HFE
2SC2785-HFE



2SC4927-01



ERD29-08J
RU4DS



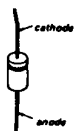
RBV-406H-01



2SD1408-Y

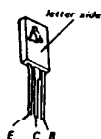


EU2Z
ES1F-N
R2K
WG713A



RD10ES-B2
RD10ES-B3
RD13ES-B2
RD13ES-B3
RD39ES-B2
RD5.1ES-B2
RD5.6ES-B2
RD6.2ES-B2
RD6.8ES-B3
RD7.5ES-B1
RD7.5ES-B3
RD9.1ES-B1
RD9.1ES-B2
RD9.1ES-B3
1SS119

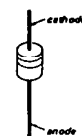
2SA1220A-P
2SC2611
2SC2688-LK



2SK669



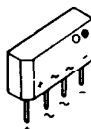
MC911



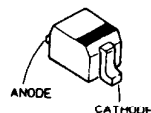
2SA1221-L
2SB734-34
2SC2958-L
2SD774-34



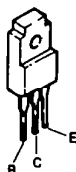
D4SB60L-F



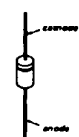
RD10SB1



2SA1306A-Y
2SC3298B-Y



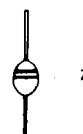
D5LC20U



MC921



U05G



SECTION 6 EXPLODED VIEWS

NOTE:

- Items with no part number and no description are not stocked because they are seldom required for routine service.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

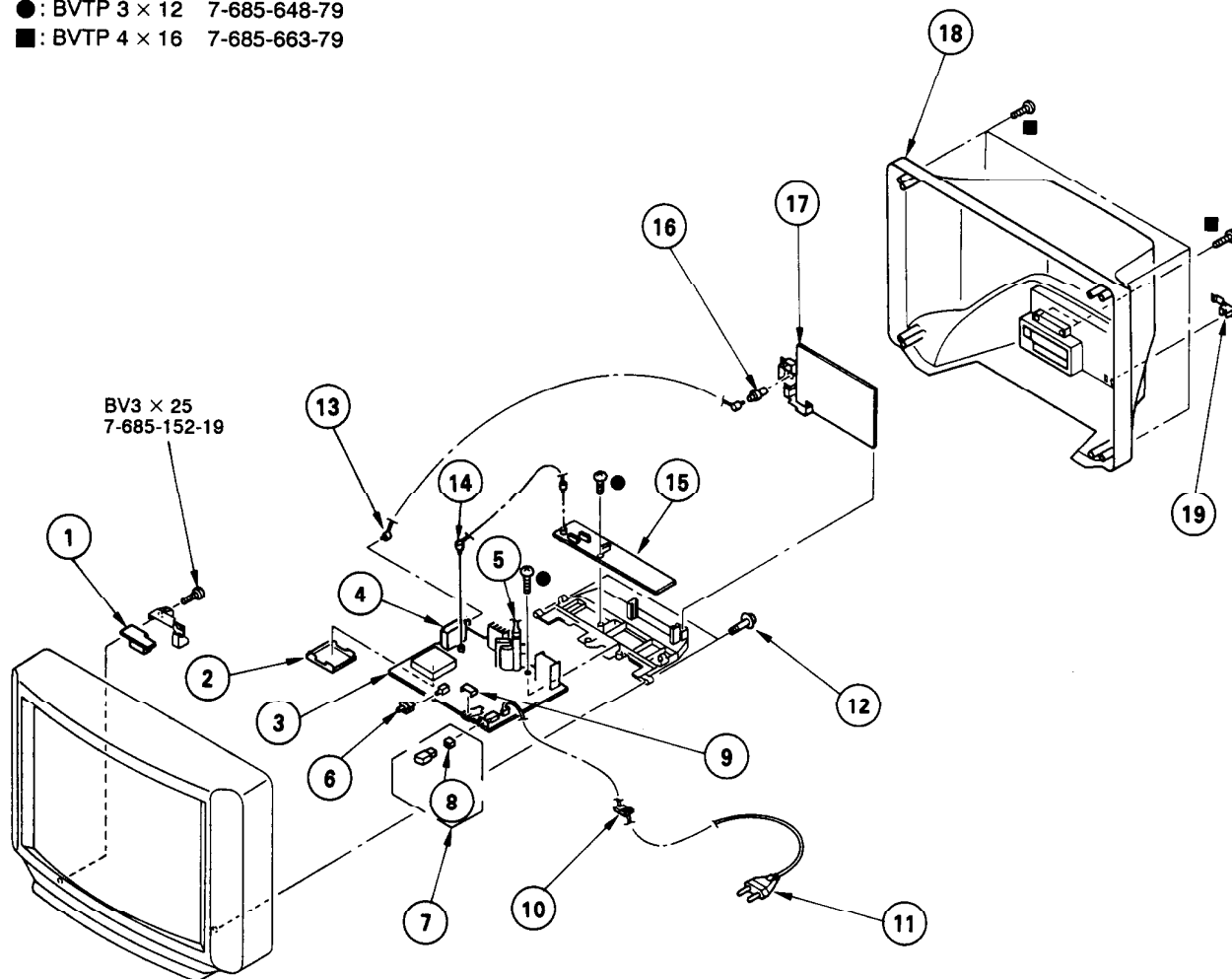
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.


The components identified by shading and mark **▲** are critical for safety. Replace only with part number specified.

6-1. CHASSIS

●: BVTP 3 × 12 7-685-648-79

■: BVTP 4 × 16 7-685-663-79



The components identified by shading and mark  are critical for safety.
Replace only with part number specified.

KV-2965MT
RM-827S

6-2. PICTURE TUBE

●: BVTP 3 × 12 7-685-648-71

